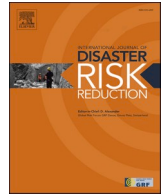




Contents lists available at ScienceDirect

International Journal of Disaster Risk Reduction

journal homepage: www.elsevier.com/locate/ijdr

Locating potential sources of capacity and vulnerability in geographically remote areas: Reflections based on three case studies

Mo Hamza^{a,*}, Kerstin Eriksson^b, Reidar Staupe-Delgado^c

^a Division of Risk Management and Societal Safety, Lund University, Sweden, P.O. Box 118, SE-221 00, Lund, Sweden

^b RISE Research Institutes of Sweden, Division Safety and Transport, Safety Research, Scheelevägen 17, SE-223 70, Lund, Sweden

^c Department of Technology and Safety, UiT the Arctic University of Norway, Postboks 6050 Langnes, 9037, Tromsø, Norway

ARTICLE INFO

Keywords:

Remoteness
Arctic
Mountain environments
Islands
Disaster risk reduction
Resilience
Vulnerability

ABSTRACT

The relationship between geographical and social forms of remoteness and the concepts of vulnerability and capacity remains unclear. Recognising that capacities and vulnerabilities tend to co-exist in a population, the article assumes that the dynamics between these concepts are situational. In this article we draw on three cases to analyse the issue. An Arctic case study provides insight on remoteness in terms of latitude, followed by an Andean case study reflecting on the role of altitude, and lastly an Island community case study provides a perspective on external isolation (recognising that island communities are also typically connected). From these cases we glean a number of preliminary insights for further investigation. One is that remote communities tend to avoid dependence on external actors when possible. Second, power dynamics between remote communities and centralised actors can make disaster management difficult if local capacities are overrun but trust is not present. Third, remoteness mainly becomes a direct source of vulnerability if remoteness translates into neglect, rendering places 'peripheral'. Generalisable insights suggest that relationships take time to build and cannot be easily established after the fact. The cases hence suggest that remote areas typically have a strained relationship with centralised authorities which fosters local coping strategies but also a fear of external dependence, which may ultimately prove problematic in times of adversity.

1. Introduction

Remoteness and relative isolation are often popularly framed as sources of vulnerability for concerned communities, despite research problematising such views (cf [1,2]). The increasing tendency for professionalisation and centralisation of disaster management capacities, including first responder services, causes response times to be significantly higher in areas far from urban centres. The inability of communities in the 'periphery' to rely on a timely response to a disaster has thus brought the importance of local capacities and self-sufficiency to the fore, a debate rooted in wider discussions on centralisation and decentralisation. Hence, while scholars have for some time theorised geographic remoteness as a source of disaster vulnerability and marginalisation, few studies have looked more specifically at the strategies employed by communities to cope in spite of their geographic remoteness and relative exclusion from the hubs where decisions, formal resources and capacities are concentrated.

In this context, it is important to further probe into the origins of

locally developed coping mechanisms, looking beyond the immediately obvious. This also implies a better understanding of remoteness as a concept beyond physical distance, accessibility, latitude or altitude while giving adequate weight and attention to mechanisms that are rooted in cultural norms and informed by historic practices. Remoteness is not only a geographical reality—it is as much a state of mind [3]. Isolation from networks, relative small size of communities, underinvestment, and poor critical infrastructure all contribute and add to a sense of remoteness whether that manifests in mountain areas, remote islands, arctic communities, or even poorly connected urban areas, as this paper will later demonstrate.

According to Maru and colleagues [4]; people in remote areas are usually seen, broadly speaking, in two contradicting or paradoxical narratives. The first is that people in remote areas are resilient (or maybe more resilient in comparison to others) in the face of hazards and climate change given their heritage. The second narrative is that they are chronically disadvantaged as a result of being located in the periphery. The same study cited above further contends that if these narratives are

* Corresponding author.

E-mail addresses: mo.hamza@risk.lth.se (M. Hamza), Kerstin.eriksson@ri.se (K. Eriksson), staupe-delgado@gmail.com (R. Staupe-Delgado).

taken 'in isolation and in extremis' they would have significant implications on how remote areas are included in policy and share of resources, whether in relation to disaster preparedness or climate change adaptation. In most cases, simplistic or inadequate, highly standardised and centralised efforts to deal with remote areas lead to systemic failure mainly due to a lack of understanding of the biophysical and social complexity of such areas [4]. Trust is another central component. Compounded by remote areas' populations' lack of understanding of modern governance, this results in an inability to influence policies, preparedness mechanisms or indeed adaptation measures, exacerbating a sense of isolation for people inhabiting remote areas. However, some remote areas have also shown great success in exercising power in district politics. In that sense, remoteness is not only a physical or geographical disconnect but a social one too.

Remote communities' disenfranchisement and oftentimes minimal influence over national and global policies is also rooted in rapid changes of globalisation and global environmental changes. Precarious subsistence economies, migration or forced displacement and unplanned development increase the vulnerability of certain segments of the population who may already live in hazardous areas with little or no protection. This is not to say resistance does not take place locally, simply that these communities exist within broader political landscapes and that vulnerabilities and forms of resilience do not make sense as either-or categories.

This paper aims to analyse the ways in which geographical and social remoteness can not only be understood as a source of disaster vulnerability, but also as a factor contributing to the potential establishment of local disaster capacities/resilience. The paper explores the role that remoteness plays in disaster risk in combination with the unique characteristics of vulnerability and capacity that might set it apart from other more accessible locations. We approach this theme by reflecting on prospective cultural practices that may be seen as capacity assets that have not been tapped into by formal preparedness and response mechanisms. A key implication from this investigation would be to glean how these inert characteristics could inform mitigation, preparedness and response strategies by identifying concrete factors contributing to vulnerability and capacity in remote contexts. In doing so, the paper will contribute to informing better and more effective formal preparedness and response mechanisms that capitalise on, rather than ignore, existing local capacities and practices. More specifically, the paper will attempt to unpack the overarching question into the following sub-questions:

- o How can remoteness *per se* constitute a potential source of vulnerability?
- o How can remoteness *per se* be understood as a potential source of capacity?
- o Which factors may influence whether a peripheral community is rendered vulnerable or more capable due to its remoteness (cultural, structural, etc.)?
- o What sort of strategies or policies may enable to mitigate the effects of potential sources of remoteness-induced vulnerability and enhance capacity, especially in resource-constrained contexts?

Following the introduction, the paper will move into framing remoteness as a concept through a structural lens, looking beyond mere physical accessibility. An expansion on understanding vulnerabilities and capacities in remote locations follows contrasting framings of classic or conventional definitions and articulation with more nuanced understanding of vulnerabilities and capacities in remoteness. Three case studies will form the basis of analysis, reflection and discussion aiming at ascertaining whether conventional framings of vulnerabilities and capacities still hold in remote locations when the kind of marginalisation articulated in the introduction gives rise to vulnerabilities and capacities that go beyond physical access or disconnect. These case studies have been selected purposefully to tease out different kinds of remoteness in a broad sense of the word. They draw primarily on secondary sources. The

paper concludes with another set of reflections on how this knowledge of remote areas could contribute to better disaster response policies and practice.

2. Remoteness

2.1. Defining remoteness

Conventional definitions of remoteness focus on geography and more specifically on proximity and access to services and resources, both public and private. For example, the Australian 'Accessibility Remoteness Index' takes into account the distance of an area from service centres (health, education, energy, clean water, markets, etc.) and the quality of transport to these areas [5]. The three cases Maru and colleagues' [4] study examines are selected on the basis of distance access – Australia's interior hot desert, Botswana's north western, central and south-western regions and the Amazon. While the study shows that remoteness could be both in the interior as well as the periphery of a country, the defining characteristics are accessibility to the area, and the area's access and connectivity to infrastructures of the same quality as the country at large [4]. A similar quantitative approach to the study of interurban differences in social vulnerability was applied in Parry and colleagues [6] on social vulnerability to climate shocks in the Brazilian Amazon. Social sensitivity to shocks and sensitivity of food systems along with adaptive capacity in the study area were explained by remoteness from urban centres and road connectivity (i.e. spatial factors and primarily geographical remoteness). While the study demonstrates an underlying spatial dimension to Adger's [7] vulnerability framework, and Cutter and colleagues' [8] place-based analysis and whether accessibility is a root cause to vulnerability as in Blaikie and others [9]; it nevertheless acknowledges that geographical economics and political economy are two framings for explaining spatial inequalities.

In line with definitions that focus mainly on physical inaccessibility, vulnerability, fragility and proneness to disasters are attributed and linked to harsh climate or geophysical extremes. In other words, explanations lie in the extreme characteristics of nature or its inhospitability rather than in 'social histories' according to Hewitt and Mehta [10].

Gibson and colleagues' [3] study of the artistic community in Darwin, Australia, found that remoteness and proximity are both tangible and juxtaposed—remote from southern Australian states and major urban centres (Melbourne or Sydney) but close to Asia and Aboriginal country. The study of Darwin's artistic community shows that remoteness is both perceived and imagined where people define and understand themselves in relation to others. The tangible (physical distance and proximity) and the intangible (sense of place, isolation) shape a political economy [3] and further define how the inhabitants organise and shape their lives and livelihoods as a consequence with further reaching impact on what they expect from the outside world or from 'others'.

Remoteness is often romanticised. Distant lands are often seen as unspoiled natural habitats of wilderness, empty spaces of refuge and tranquillity, or pilgrimage sites for spiritual reflection. These narratives do not usually include humans in that picture. But when they do, it is either tough, adaptable, deeply in touch with nature inhabitants who have lived there for millennia and are capable and adept at coping with their harsh and inhospitable environments, or risk-taking adventurers and explorers of the final frontiers who also know what they are getting themselves into [10]. This aligns with one of the two paradoxical narratives in the introduction section above and could further reinforce the notion that little or no outside help is needed for such areas.

In this paper, we argue that inaccessibility is not the same as marginalisation. For example, conflicts and natural hazards may also cut societies off. Although it might be common that remote and inaccessible areas have a lesser voice in central political decision-making, marginalisation could be a consequence of socio-political and cultural factors

such as the areas being predominantly populated by indigenous populations where race, social structures, legacy of conflict and even prejudices play a role in further socially isolating and disconnecting remote areas, as well as being physically inaccessible. Legacies of armed conflict, guerrilla, civil or international wars [10] that were originally sparked by discontent and revolt by inhabitants against neglect and marginalisation of their remote areas tend to leave long lasting scars on the communities and may further reinforce harsh treatments from political centres lasting decades if not generations.

As seen from the discussion above there seems to be little agreement or consensus on the concepts of, and the underlying factors to vulnerability and resilience in remote areas. The discourse on hazards, vulnerability, risk and resilience is subject to divergent theoretical and empirical views [11]. There is a large body of literature that models the relationship between hazards, vulnerability and resilience and all show how complex and multidimensional that relationship is. If hazard is a potential event that may affect a community, risk is the probability of a hazard occurring and the sensitivity of a system due to its exposure to hazard(s), and vulnerability and resilience are the potential or actual responses to hazard(s). Social vulnerability, however, remains hard to quantify because of the complexity of coupled social-ecological systems and the exposure to perturbation stresses [11,12]. Understanding vulnerabilities and resilience in remote locations with further layers of complexity requires further contextualisation not only for particular events or the impact on communities [11,13] but with clear grounding of vulnerability as a consequence of, or in the context of marginalisation and isolation beyond simple notions of inaccessibility. In the two following sections, we will attempt to unpack the specific nature of vulnerability and whether remoteness *per se* is an underlying cause of vulnerability, and on the flip side, whether remoteness could be a source of resilience and capacity.

2.2. Vulnerability and remoteness

The realisation that disaster outcomes are more a result of underlying societal challenges than the nature of the natural hazard event itself is now broadly accepted within the field of disaster studies, giving rise to a rejection of the term 'natural disaster' (e.g. Refs. [14,15] by leading researchers in the field. A move away from considering the oftentimes disastrous impacts of hazards as inevitable (or natural) has thus shifted the attention over to underlying societal characteristics, collectively referred to as vulnerabilities. This shift in the way the field approaches the term 'disaster' is in turn reflected in recent definitions of the phenomenon, such as the following example:

A serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts [16].

The definition above suggests that disaster outcome may be seen as largely shaped by physical exposure to disaster risk, underlying sources of vulnerability and any coping or response capacity that may cushion against the exposure or underlying susceptibility to disaster risk. Remoteness and other forms of geographical marginalisation or isolation from urban centres or wealth generation cores give rise to qualitatively different forms of vulnerability in peripheral areas as capacity will have to be maintained with fewer immediately available external resources to draw on [17,18]. While the specific ways in which remoteness shapes disaster risk will inevitably vary, insight from case studies in regions as diverse as the Arctic, small islands and the Andes provide grounds for drawing some general inferences about remoteness in connection to vulnerability at a conceptual level.

A defining feature of disaster is the inability of the affected population to cope without outside assistance [19]. From this, it logically

follows that if local resources were wholly adequate the event would not constitute a disaster as conventionally defined. In facing disasters, therefore, remote communities will often find that physical distance from emergency management hubs and specialised agencies makes such assistance less accessible and timely. In this way, remoteness is a form of vulnerability both in its own right—in the sense that if local capacities prove insufficient it may take time for outside assistance to arrive—but also because it may compound existing forms of vulnerability, such as social, economic, political and cultural marginalisation.

2.3. Remoteness as a source of capacity

Remoteness is described as having both positive and negative effects on a community's capacity to cope. As mentioned, there are two main narratives on people's resilience in remote contexts [4,20]. The first narrative, as discussed above, is that people living in remote areas are among the most vulnerable to climate change. The second narrative is that people that live in remote areas are among the best equipped for climate change since they demonstrate significant resilience to climate and resource variability. This narrative highlights the experience of living with high levels of uncertainty in remote and harsh climates in areas with scarce resources [4,20].

There are both parallels and contextual differences when it comes to what is regarded as a source of capacity in different remote communities. Capacity is here understood as 'the set of diverse knowledge, skills and resources people can claim, access and resort to in dealing with hazards and disasters' [21]: 863). Capability is both people and context specific and is constantly evolving. Furthermore, it reflects people's everyday life and thus strategies for coping are linked to people's experience.

There is a rich literature on diverse capabilities for responding to disasters in remote communities. Still, the literature on capabilities, that are developed in response to the increasing recognition that people have resources, skills and knowledge, has not attracted the same amount of interest as the literature on vulnerability.

The sources of capabilities that are identified in the research literature when discussing remote areas are commonly linked to endogenous resources [22]. One source for capacity that is commonly described is local environmental knowledge, deep cultural experience of the local environment or traditional knowledge [4,22]. McAdoo and colleagues [23]; for example, describe communities where capabilities have been strengthened through knowledge that have passed down through generations. One such community is the Simeulue Island, where most of the population survived the 2004 Indian Ocean Tsunami due to their quick reactions that resulted from oral histories [23]. Several studies and scholars argue that when working with disaster risk reduction, or indeed climate change adaptation, it is essential to not just integrate solutions based on well-documented scientific knowledge but recognise the indigenous knowledge bases and consider the body of knowledge that the local communities have acquired over a long time [24–28]. Similarly, Galliard and colleagues [20] describe this particular problem that arises from simply transferring experience, knowledge and technology to developing countries from industrialised countries. Another commonly described endogenous resource and an important capacity for rural communities is social capital or effective social networks [4, 22]. Furthermore, Hightree and others [29] found in a study of rural communities in Idaho that the most successful communities are the ones that pay attention to all types of capital. A third resource is indigenous skills [22]. In other words, remoteness does not automatically constitute a source of vulnerability and neither does it constitute an a priori source of resilience. Relations between smaller and larger population centres matter greatly and so too does the internal organization of remote communities as well as the way in which power hubs relate to and involve smaller and more distant communities.

3. Three case studies

Below we will present three case studies selected with the aim of teasing out different kinds of remoteness and potential coping effects. These draw on secondary sources and their purpose is primarily to serve as illustrative examples of the remoteness types and effects sketched out in this paper. First an Arctic case study on Shishmaref, Alaska (see Fig. 1, location one on the map). This study provides insight on remoteness in terms of latitude. The second case study is Nariño in the Colombian Andes (see Fig. 1, location two on the map). This case study is centered on the role of altitude and also the role of conflict in social isolation. The third case study centres on the island community Nawairuku in Fiji (see Fig. 1, location three on the map). This case study provides a perspective on external isolation (recognising that island communities are also typically connected regionally and globally).

3.1. Shishmaref, Alaska

Villages in Alaska, the most northern US state, are culturally and politically remote and removed from the political centres of decision-making [31]. They also face significant extreme hazards and are at the front line of climate change impact with significant flooding and increased erosion [32–34]. Nine of the 200 villages, including Shishmaref, are considered under imminent threat, with thirty one villages identified by the USGAO [32] as being in significant danger due to flooding and erosion.

Shishmaref is a small Inūpiat village located on an island in the Bering Sea with an economy that is a mixture of cash and subsistence. Shishmaref's subsistence of hunting practices, trading and traditional

foods and animal migration routes and harvesting still follows the annual cycle of the seasons [31,35]. Due to its isolation and remoteness and being rural, the village lacks any roads and is highly dependent on air-transport for goods and travel in and out. The United States Army Corps of Engineers estimated that the island had up to fifteen years before erosion and flooding would have made the village uninhabitable [36]. Sea walls and revetment projects built over the years have had a limited lifespan.

The village's long history of pre- and post-settlement plays a significant role in its current vulnerability and multiple predicaments the population faces. The population - Kigiqitamiut people – had a sedentary seasonal lifestyle prior to settlement and colonisation where they spent the summers inland and winters and springs along the coast [31,37–40]. Mobility was a successful strategy mitigating against challenging and changing sub-Arctic conditions. The population's high mobility meant flexibility to environmental changes and hazards, allowing them to adapt to unexpected hazards or abrupt changes. Progressive government strategies for sedentarisation were linked to 'civilising' the indigenous population [31,37,41,42], where development created immobile infrastructure forcing people to stay in one place with limited options for mobility in the same way as prior to settlement, making traditional coping and adaptation strategies either less practical or unavailable at all [31].

Understanding the ties between historical vulnerability and exposure lies in understanding where the colonial history of Shishmaref created and exacerbated vulnerability by discouraging traditional adaptation, excluding the local community from significant and life altering development decisions, and relocating such decision-making processes and powers outside of the community [31]. In most cases this is not unique

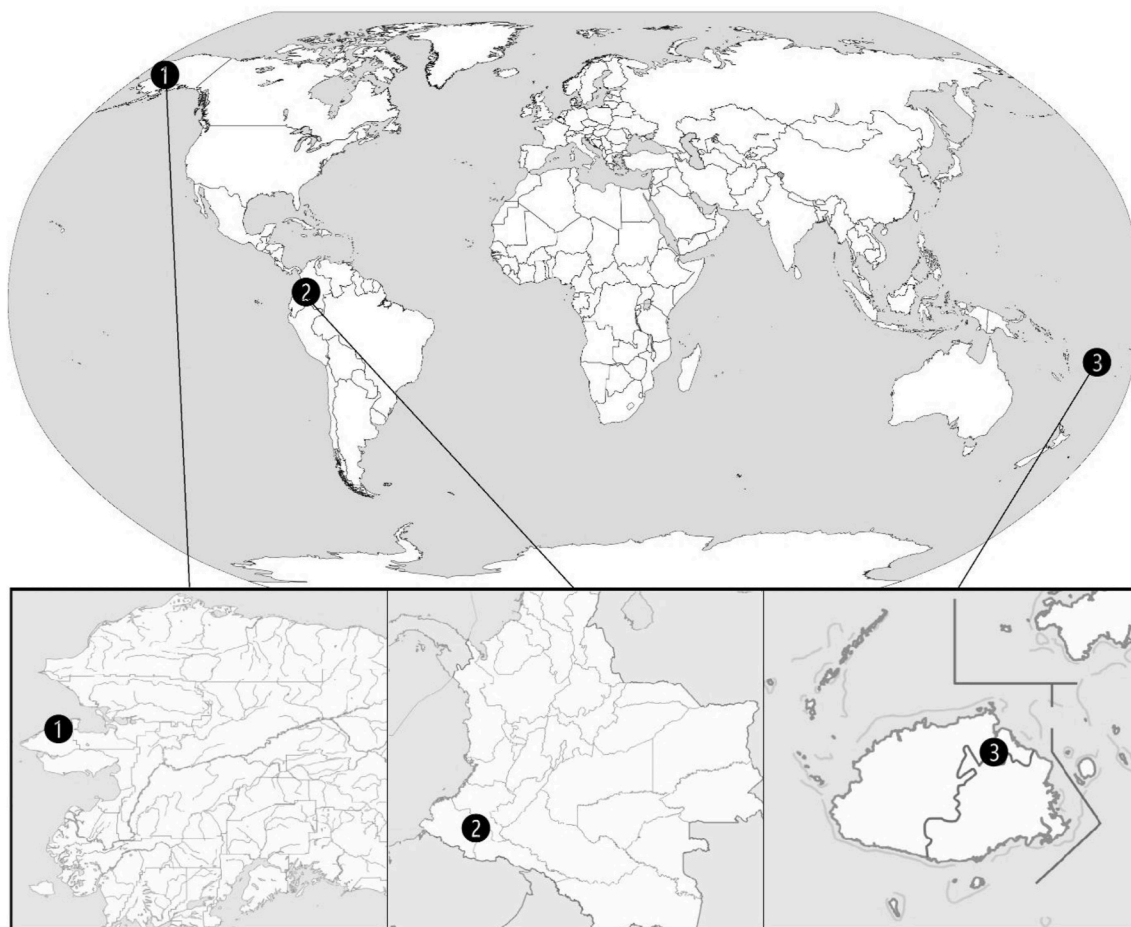


Fig. 1. Locating the three case study areas (drawing on [30]. Note that the maps are not to scale.

or specific to Shishmaref, but seems to be a defining characteristic of remote and indigenous areas.

To further elaborate, Marino [31] distinguishes three ways in which this colonial legacy contributed to vulnerability. First, development decisions made without consultation with the local population resulted in infrastructure built in marginalised, remote and exposed locations [43,44]. Second, colonisation and sedentarisation ended high mobility as an adaptation to unexpected hazards and extreme weather without replacing it with appropriate adaptation strategies. Third, decision-making power over infrastructure was located outside the community making it more vulnerable to political and economic changes of the state. As a consequence, the choices available to the Shishmaref community were influenced and restricted by other pressures [35].

This took on a starker shape and became more evident when, in 2002, Shishmaref voted to relocate off the island to a more secure location on the mainland. The move and the relocation never happened or even significantly progressed in the last decade. But that vote resulted in the near halting of all federal development funding coming to Shishmaref as a result of an “anticipated” move. When other villages were receiving funding for housing, medical clinics, or water systems, Shishmaref received nearly none, thus exacerbating people’s vulnerability and future uncertainty [35].

A lot of the research work done in such remote and indigenous locations is carried out by disaster anthropologists who agree that the outcomes of disasters are socially constructed and become visible when pre-existing socioeconomic inequalities and vulnerabilities (access to political power, economic and social capital, social geographies of race and ethnicity, risks linked to gender and age, histories of colonisation, etc.) meet ecological conditions [31,44–48].

Colonisation and ill-conceived modernisation did not only bring fixed infrastructure that permanently altered local communities’ way of life, coping mechanisms, and to a high degree resilience against impending climate change impact and associated hazards; it also brought planning and adaptation methods that are alien to Shishmaref’s, and indeed other indigenous societies’ way of life. Notions of time and how a community deals with uncertainty or approaches preparedness planning rarely feature in discourses on vulnerability and resilience. Marino and Lazrus’ [49] long-term anthropological studies in Alaska and Tuvalu found that cultural relationships with time and where it features in preparedness planning does ‘... not translate smoothly between boardrooms and community settings’ [49]. Preparation means different things to different people and in this case there is little to no alignment between how an indigenous community perceives preparation and that of formal state structures.

Disaster preparedness, and indeed climate change adaptation, are overwhelmingly based on prediction. Knowing the future and even modelling it determine knowing what to prepare for, mitigate against and how to direct funding. Yet, as Taddei [50] notes that foresight or prediction are not necessarily prerequisites for preparedness and adaptation in all cultures. In Shishmaref preparedness and adaptation do not necessarily follow, or are based on, knowing the future. Marino & Lazrus [49] cite Wisniewski [51] in noting that knowing the future in indigenous cultures could be seen as a form of hubris and that there are taboos around certainty about precise ecological futures. As Bates writes, ‘assumptions about time as a linear flow of constant rate, with neat chronologies linking events in the past, present, and future are convictions that are deeply embedded in Western thought’ [52]: 88).

In Shishmaref, it is mostly preparing for uncertainty rather than for predicted outcomes that is often the central organising tool for their adaptation which has been increasingly challenged or made redundant with settlement and sedentarisation. At the same time disaster preparedness and climate change adaptation have their own limits and inconsistencies in theory, use and implications when applied in remote indigenous communities where social and environmental justice are concerned [53]. Preparedness and adaptation misconstrue how

communities change and autonomously adapt to changing conditions because approaches put too much emphasis on external factors rather than inherent characteristics of a community [54,55], using superficial assessment and going for quick technical fix solutions that, on the one hand, fail to address communities’ needs, and on the other hand, end up creating new vulnerabilities or perpetuating and exacerbating old ones.

At the time of writing the above resulted in a stalemate and stagnation in Shishmaref since most of the scholarly work cited above was done. From correspondences and interview with Elizabeth Marino, one of the leading scholars on the case, it appears that while the State of Alaska released a report that identified Shishmaref as the second most at risk place in Alaska because of significant flooding and erosion, relocation has not begun and there is no infrastructure on the mainland to date where people could evacuate to or begin a staged relocation. Shishmaref continues to experience dramatic flooding - including a storm in 2020 which destroyed the only road on the island and a newly constructed sea wall resulting in an estimated total of 6.5 million dollars in damage. Residents continue to be split about whether protection in place or relocation is the best decision for the community, though a majority is working towards relocating in order to protect the next generation of Kigiktamiut residents. The Alaska Native Tribal Health Consortium has opened a Center for Environmentally Threatened Communities and is pushing for protection and relocation for tribes that have been identified as most at risk.

In summary, remoteness, isolation and indigeneity as evidenced in an example such as Shishmaref, create systemic vulnerability that is deeply imbedded in political and economic processes with historical roots [49] and cannot be simply traced to a single driver or attributed to an even more simplistic explanation as exposure to hazards.

3.2. Nariño, the Colombian Andes

Nariño is the south-westernmost regional jurisdiction, or department (departamento), in Colombia. Located in the Andean region of Colombia, it is relatively remote from economic and power centres in terms of both altitude and latitude. It is also one of the Colombian departments most affected by the conflict of the country [56,57], which has continued albeit in a different form after the signing of the Colombian peace treaty [58,59]. While not remote in and by itself, parts of Nariño, such as Tumaco and other towns located on the western pacific coast, have been made inaccessible at times because of the conflict and also because of land piracy [59]. Hence, several towns and smaller cities in the area have remained isolated from political and economic centres for periods of time not only because of the Andean physical geography, but also because of conflict and insecurity that in turn affects the mobility of both people and goods.

The village of Aponte serves as a useful example for illustrating the various ways in which villages in the region may become multidimensionally remote as a result of these conditions. Aponte is located in the north eastern edge of Nariño in a volcanic valley landscape at approximately 1500 m above sea level, just over 65 km from the departmental capital of San Juan de Pasto. As a town, Aponte appears well governed in many ways, having a highly participatory governance structure and low levels of violence. Its inhabitants, the Inga, also won the UN-backed Equatorial Prize in 2015 due to their efforts to eradicate illicit crops from their reserve and for resisting the occupation of armed forces on their territory. Aponte may thus be described as a tightly knit community characterised by high levels of inward trust.

Since the end of 2015, the community witnessed the emergence of fissures in the ground, indicating the emergence of a mass movement phenomenon. Shortly after it was observed that Aponte was slowly but surely crumbling due to a gradual onset geological hazard that will ultimately require a large-scale resettlement effort [60], a process that is not concluded at the time of writing. The hardship faced by the Inga in the face of this disaster illustrates the capacities and vulnerabilities attributable to geographical marginalisation in several ways.

Firstly, the political resourcefulness of members of the Inga have meant that they have been able to draw on their global network to increase the political saliency of their plight, despite the relative neglect of departmental authorities. The participatory nature of their community-based decision-making model have also facilitated mobilisation and resistance to recovery plans that fail to take community needs into account. The quality of social relationships has also proved a vital asset for many displaced households and for those who have had their livelihoods impacted by the disaster. Being well accustomed to relying on their own capacities due to centuries of marginalisation from regional authorities, the Inga rarely draw on outside experts when contingencies arise. Unfortunately, however, strong local mobilisation has not proved sufficient to attract the necessary attention of municipal, departmental or national authorities, as demonstrated by the continued protraction of the necessary resettlement and recovery effort.

Secondly, the high inward trust yet marked outward distrust that characterises life in Aponte similarly represents both an asset and a source of vulnerability. While community ties have provided a safety net for many affected families, their long-standing history of discrimination ultimately shapes the interaction with authorities concerning their much-anticipated resettlement program. With over half of the built environment in Aponte being affected by the mass movement phenomenon at present the need for swift solution keeps growing. Yet continued underinvestment in viable solutions that appear acceptable for the community loom large all the while the creeping disaster continues to advance, destroying houses week by week, causing families to dread occupying them in fear of having their roofs collapse on top of them at any moment. While municipal authorities have arranged for the provision of emergency shelters, representatives of the Inga continue to underline their inadequacy as hygienic conditions and livelihoods have not been part of the planning process. At one point a small group of community representatives allegedly walked to the departmental capital for an audience with the regional governor some 65 km away to voice their concerns, but to little avail.

Third, the case also illustrates the contradictions that quickly become evident in considering connections between trust and proximity. Highly distrustful and frustrated with local authorities, several representatives of the Inga have expressed that the assistance of national or international actors, such as organisations associated with the United Nations system, would be preferable to relying on departmental or local authorities. This stands in direct contradiction to the proximity principle in disaster management which stipulates that disasters ought to be managed at the lowest possible level of governance. This put the political and technical responsibility of managing the Aponte disaster with the municipality and the governor in San Juan de Pasto, actors in which the Inga in general have little trust not only because of their present situation but also because of historical experience. In this way it makes sense to think of Aponte not only as isolated in terms of latitude and altitude, or as isolated within a larger territory considered 'red zone' due to conflict (which was the case until recently), but also due to their distrust towards the authorities mandated to assist them in times of need. Thus, while their skills in political mobilisation allowed them to draw on a large network of international actors, including a national and global network of indigenous leaders, they face the dilemma of being constrained by their relationship with the jurisdiction in which their reserve is situated.

To summarise, this case aims to add nuance to how we think about the relationship between the connections between capacities and vulnerabilities from a community perspective. We saw that from the perspective of disaster management, the case of Aponte and other towns in and around the Andean region thus illustrate the additional dynamic pressures contributing to disaster when communities are remote in terms of accessibility and influence, not only as a result of altitude or distance, but also because of societal aspects of remoteness, such as conflict, political neglect and distrust. A multidimensional concept of remoteness may in this way serve to better understand the interplay of

capacities and vulnerabilities as central concepts in disaster research.

3.3. Nawairuku, Fiji

Small Islands Developing States (SIDS) are often portrayed as one of the most vulnerable places to climate change related risks, including cyclones, changing rainfall patterns, increasing air and sea surface temperatures [1,61–63]. Farbotko and Lazrus [64]: 388) argue that small island 'populations are being positioned by foreign actors to represent an entire planet under threat as the climate change crisis discourse demands immediate evidence of the crisis it names'.

That vulnerability narrative is countered by a resilience one in which Small island populations are able to, a large extent, draw on traditional knowledge and coping strategies [1]. Farbotko and Lazrus [64] argue that it is essential to consider how the populations that are described as victims of climate change experience and are affected by these narratives. Small islands are not homogenous and thus there are differences when it comes to their vulnerability as well as other aspects [61,63]. For example, it makes a difference if a village is located directly by the sea or further inland. How people respond to and experience climate stressors, how developed warning systems are, what role socioeconomic and cultural factors play, including their beliefs and worldviews, etc. are all highly contextual factors that determine varying degrees of vulnerability and resilience [65,66].

Fiji, an island country in the South Pacific Ocean, consists of more than 300 islands covering a land mass of over 18,000 km² with a population of less than one million. The islands are a mixture of volcanic and mountainous terrain [66,67]. The region is commonly regarded as especially vulnerable to climate change [66]. The country is exposed to hazards such as droughts, cyclones, earthquakes, volcanic eruptions, floods and tsunamis. But the impacts of climate change in the Pacific Island communities vary due to local variations in social history, culture, land-use practices and economy [65,68]. In addition, it also varies between towns and villages in the coastal zone versus inland.

Nawairuku is a village in the Ra province at Viti Levu, Fiji. The island Viti Levu is mountainous and of volcanic origin. Ra province is positioned in the north-east of the island and consists of two major towns and 89 villages. One of those villages is Nawairuku that is geographically isolated from the urban centres. It is an interior village situated in a riverine valley. The village is located 51 m above sea level and approximately 24 km from the coast and surrounded by cultivated hills and steep forests with a river flowing through the village [65,68]. In the village, the houses are today constructed with imported materials and not the traditional way with local material, this practice has introduced new vulnerabilities. The traditional house has a proven ability to withstand extreme weather events. The village has approximately 65 households and approximately 320 inhabitants, all iTaukei (Indigenous Fijian people) [65,68]. In the sugar cane harvest season (June to November) men leave the village to be part of the harvest work. This makes the population in the village fluctuate with the season [65]. The inhabitants rely on farming and livestock for subsistence and income [65,68]. There are two access roads to the village. One of the roads is crossing a river and the second is an inland alternative road that can be used when there is damage to the bridge. A small concrete dam approximately 2.8 km away from the village is the main source of water [68].

The village has been exposed to several disasters, but the recent disasters were of a magnitude that they never experienced before [66]. The disasters that they refer to is Cyclone Winston in 2016, a category 5 cyclone that further lead to extreme flooding. None of the disasters resulted in any direct human losses but they had severe impact on the infrastructure, agriculture land as well as human health and well-being. Winston caused a lot more damage than the flood. But since the flood occurred when they were still recovering from Winston it increased the problems. At the time of the two disasters there was no central village hazard management plan. Past experience with warnings for heavy rain

and cyclones that had resulted in no or very limited impact had resulted in a false sense of security. There were also some inhabitants that shared a fatalistic perspective [65].

Historically, the village has been relocated several times due to disasters. In the late 1800s it was relocated from further inland and in the 1980s due to a severe flood underwent a second relocation to the opposite side of the river. This relocation has also resulted in the fact that the land surrounding the village is not owned by the village. Instead the village owns land approximately 5 km away at the old location of the village [68].

How people experience and respond to climatic stressors depends on various cultural and socio-economic factors. Currenti [68] describes several adaptation strategies developed by the people in Nawairuku. There is a will to be able to handle their own situation, which means that the villagers prevent and prepare for future events. One example of an adaptation strategy is that they grow fast-growing root crops to have available food during the cyclone season. They have also relocated agricultural plots and houses from high risk-areas. Another example is carpentry workshops that have been held in the village for sharing methods and techniques for building more resilient structures to cyclones. However, as the village did not have access to necessary building materials, those workshops did not contribute to an increased resilience in the way it was intended. An example of a more problematic change is that farms have been converted to a more commercial intensive agriculture. This has increased income levels which pay for rising living costs and is a way to feed a growing population. However, it does also affect the longer-term health of soils, if this is not taken care of properly. In addition, traditionally, key crops were grown only for the community's own subsistence while to sell crops were, and is still seen by some people as a taboo. Thus, some older participants believe that those farms that sell crops will face difficult times.

In summary, the Nawairuku case points to the complexity of describing island villages and villagers as either vulnerable or resilient in the context of remoteness. What strategies or policies are successful in mitigating vulnerability and enhancing capacity depends as described on various cultural and socio-economic factors which are specific to the community. Thus there is a need to understand the local context and build on, in this case, the islanders' perspective.

4. Concluding remarks

This paper explored vulnerability and capacity in three distinct notions of remoteness: 1) Latitude was examined through an Arctic case; 2) Altitude was explored through an Andean case; and 3) External isolation was examined through an island case. This section will reflect on similarities and differences between these three set ups to further inform how we deal with disasters and climate change in exceptional contexts.

At the outset of this paper a series of questions were formulated which will be reflected on in the following concluding paragraphs. The aim of the paper was to breakdown some of the common and less common understandings of what remoteness means vis-à-vis capacity and resilience. The purpose was to offer an attempt to think more structurally when pinpointing how remote areas should be approached in disaster preparedness or climate change adaptation. The cases used in the paper do not constitute an exhaustive list and there is no suggestion of any universalisation either given how contextual the issues the paper addressed are. The intention of the paper was to provide an informed reflection to help guide further discussions on this topic. While the paper draws primarily on secondary sources, it raises a number of theoretically fruitful points that may be expanded on through fieldwork and other appropriate research designs.

Starting with the Arctic, or 'Arcticness', even though the actual word might not be linguistically sound, as Ingrid Medby notes in her preface to Ref. [69] edited volume, the Arctic has always been seen as a paradoxical region associated with disasters and conflict over resources yet also a place of opportunity. In all cases, framings and perceptions were

always exogenous or those of outsiders to the region. What are Arctic qualities or what 'Arcticness' really means has never been subject to any in depth dialogue except in rare studies and publications such as Kelman [69]. It is also a region where cold disasters challenge our conventional understanding of disasters. These extreme conditions perpetuate risks by making preparation and recovery more difficult, especially during periods of harsh weather. The distance between settlements and major urban centres mean that under Arctic conditions help is rarely just around the corner. The Andean and island cases show similar tendencies. If we understand disasters as situations requiring outside intervention we could in some ways state that such environments are less disaster prone in some dimensions, but more vulnerable if disaster strikes, owing to the difficulty of securing swift outside assistance. On the other hand, this can also force communities to rely less on external assistance and develop a culture of relative self-reliance.

Remote communities have built up resources and skills over time that enable them to face most routine contingencies with relative ease. For example, it is not uncommon for public authorities to find that rural communities have already sorted out a problem by the time centrally mandated help arrives, such as having cleared stone debris from the road. It is usually only in situations where the scale of the episode overwhelms local capacities that external help must be called in. The need for external capacities to shore up local capabilities is frequently used as a simple distinction between disasters and more routine incidents; disasters exhaust capacities because capacities are scaled for what has elsewhere been labelled routine incidents, or rather, manageable incidents. Disasters have thus been described as non-routine in the literature (cf [70]). It should be noted, however, that incidents that are relatively routine may still be experienced as major individual crises or as a significant hardship, but hardships that may be overcome if sufficient effort is applied. A series of smaller disasters have also been shown to potentially erode the ability to withstand further hardships (i.e. an accumulative effect), suggesting that capacity is not an infinite resource. In truth, the distinction between capacity and vulnerability is arbitrary when presented as polar opposites and no more obvious than in the context this paper deals with. In reality the interaction between these concepts is nuanced and it is not even obvious that these concepts ought to be seen as antonyms.

In the case of remote communities, cultural and structural and legacy of colonisation along with periphery/centre power dynamics and decision-making need to be taken into account because they significantly influence whether a peripheral community is rendered vulnerable or more capable. Isolation from networks and a lack of agency and control over policies rooted in rapid changes of globalisation and global environmental changes risks leading to an increasing vulnerability. Remoteness from disaster management capacities, which today are both increasingly centralised and professionalised, might both contribute to and further strengthen distrust towards authorities. This can be reinforced even more by pre- and post-settlement practices and colonisation. Remote communities are commonly relatively small with poor critical infrastructure, which often means limited (physical) recourse. At the same time local environmental knowledge, deep cultural experiences of the local environment and traditional knowledge contribute to capabilities and resilience.

Finally, inaccessibility is not the same as marginalisation, but it has a tendency to be true if we do not capitalise on political resourcefulness of communities and develop networks to increase their political saliency. Decision-making processes and powers need to be relocated back to and closer to communities, so communities have a possibility to influence the outcome of decisions affecting their lives, livelihoods and capability. Communities need to be included in significant and life altering development decisions. There is a need to recognise and encourage traditional adaptation and indigenous knowledge base that local communities have acquired over a long time. Policies and strategies should prepare for uncertainty rather than for predicted outcomes in alignment with indigenous communities' traditional practices and perception of time.

Further, preparedness and adaptation measures need to put less emphasis on external factors and more on inherent characteristics of a community. While this paper cannot conclude on all of the questions it has posed, it fruitfully demonstrates different roles that remoteness can play in how we think about disasters and their management and serves as a building block for continued inquiry into the subject of remoteness in the context of disaster risk.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

- [1] I. Kelman, Islandness within climate change narratives of small island developing states (SIDS), *Island Studies Journal* 13 (1) (2018) 149–166.
- [2] C. Flora, J. Flora, *Rural Communities: Legacy and Change*, Westview Press, Boulder, CO, 2013.
- [3] C. Gibson, S. Luckman, J. Willoughby Smith, Creativity without borders? Rethinking remoteness and proximity, *Aust. Geogr.* 41 (1) (2010) 25–38.
- [4] Y.T. Maru, M. Stafford Smith, A. Sparrow, P.F. Pinho, O.P. Dube, A linked vulnerability and resilience framework for adaptation pathways in remote disadvantaged communities, *Global Environ. Change* 1236 (2014) 1–14.
- [5] ABS, Outcomes of ABS Views on Remoteness Consultation, Australian Bureau of Statistics (ABS), Canberra, 2001.
- [6] L. Parry, G. Davies, O. Almeida, G. Frausin, A. de Moraés, S. Rivero, N. Filizola, P. Torres, Social vulnerability to climate shocks is shaped by urban accessibility, *Ann. Assoc. Am. Geogr.* 108 (1) (2017) 125–143.
- [7] W.N. Adger, Vulnerability, *Global Environ. Change* 16 (2006) 268–281.
- [8] S.L. Cutter, B.J. Boruff, W.L. Shirley, Social vulnerability to environmental hazards, *Soc. Sci. Q.* 84 (2003) 242–261.
- [9] P.T. Blaikie, T. Canon, I. Davis, B. Wisner, *At Risk: Natural Hazards, People's Vulnerability, and Disasters*, Routledge, London and New York, 1994.
- [10] K. Hewitt, M. Mehta, Rethinking risk and disasters in mountain areas, *J. Alp. Res.* 100 (1) (2010).
- [11] S. Harwood, D. Carson, E. Marino, N. McTurk, Weather hazards, place and resilience in remote norths, in: D. Carson, R.O. Rasmussen, P. Ensign, L. Huskey, A. Taylor (Eds.), *Demography at the Edge: Remote Human Populations in Developed Nations*, Ashgate, Farnham, 2011.
- [12] R.E. Kasperson, K. Dow, Vulnerable people and places, in: W.V. Reid, et al. (Eds.), *Millennium Ecosystem Assessment, Ecosystems and Human Well-Being: Current State and Trends*, Island Press, Washington, 2006.
- [13] H. Ellemer, Reconsidering emergency management and indigenous communities in Australia, *Environ. Hazards* (6) (2005) 1–7.
- [14] K. Chmutina, J. Von Meding, A Dilemma of language: "Natural disasters" in academic literature, *International Journal of Disaster Risk Science* 10 (3) (2019) 283–292.
- [15] P. O'Keefe, K. Westgate, B. Wisner, Taking the naturalness out of natural disasters, *Nature* 260 (5552) (1976) 566–567.
- [16] Undrr, Terminology, 2017. Retrieved from: <https://www.undrr.org/terminology>. (Accessed 16 March 2021).
- [17] J.A. Cross, Megacities and small towns: different perspectives on hazard vulnerability, *Global Environ. Change B Environ. Hazards* 3 (2) (2001) 63–80.
- [18] D. King, You're on your own: community vulnerability and the need for awareness and education for predictable natural disasters, *J. Contingencies Crisis Manag.* 8 (4) (2000) 223–228.
- [19] I. Kelman, *Disaster by Choice: How Our Actions Turn Natural Hazards into Catastrophes*, Oxford University Press, Oxford, 2020.
- [20] J.C. Gaillard, Resilience of traditional societies in facing natural hazards, *Disaster Prev. Manag.* 16 (4) (2007) 522–544.
- [21] J.C. Gaillard, J.R. Cadag, M.M. Rampengan, People's capacities in facing hazards and disasters: an overview, *Nat. Hazards* 95 (2019) 863–876.
- [22] M.M. Rampengan, A.K. Boedihartono, L. Law, J. Gaillard, J. Sayer, Capacities in facing natural hazards: a small island perspective, *International Journal of Disaster Risk Science* 5 (4) (2014) 247–264.
- [23] B.G. McAdoo, L. Dengler, G. Prasetya, V. Titov, Smong: how an oral history saved thousands on Indonesia's Simeulue Island during the December 2004 and March 2005 tsunamis, *Earthq. Spectra* 22 (3) (2006) 661–669.
- [24] J. Petzold, N. Andrews, J.D. Ford, C. Hedemann, J.C. Postigo, Indigenous knowledge on climate change adaptation: a global evidence map of academic literature, *Environ. Res. Lett.* 15 (11) (2020) 113007, <https://doi.org/10.1088/1748-9326/abb330>.
- [25] C.C. Makondo, D.S. Thomas, Climate change adaptation: linking indigenous knowledge with western science for effective adaptation, *Environ. Sci. Pol.* 88 (2018) 83–91, <https://doi.org/10.1016/j.envsci.2018.06.014>.
- [26] K. Ahmad Wani, L. Ariana, Impact of climate change on indigenous people and adaptive capacity of Bajo tribe, Indonesia, *Environ. Claims J.* 30 (4) (2018) 302–313, <https://doi.org/10.1080/10406026.2018.1504380>.
- [27] L. Etchart, The role of indigenous peoples in combating climate change, *Palgrave Communications* 3 (1) (2017), <https://doi.org/10.1057/palcomms.2017.85>.
- [28] J. Mercer, I. Kelman, S. Suchet-Pearson, K. Lloyd, Integrating indigenous and scientific knowledge bases for disaster risk reduction in Papua New Guinea, *Geogr. Ann. B Hum. Geogr.* 91 (2) (2009) 157–183.
- [29] J. Hightree, A. Kliskey, L. Higgins, L. Alessa, T. Laninga, J. Barrett, Themes in community resilience: a meta-synthesis of 16 years of Idaho Community Resilience, *Community Dev.* 49 (1) (2018) 65–82.
- [30] Wikimedia Commons, World Map Blank, 2006. https://commons.wikimedia.org/wiki/File:World_Map_Blank_-_with_blue_sea.svg. (Accessed 26 May 2021).
- [31] E. Marino, The long history of environmental migration: assessing vulnerability construction and obstacles to successful relocation in Shishmaref, Alaska, *Global Environ. Change* 22 (2012) 374381.
- [32] United States General Accounting Office (USGAO), Alaska Native Villages: Limited Progress Has Been Made on Relocating Villages Threatened by Flooding and Erosion. Report to Congressional Committees, 2009. <http://www.gao.gov/new.items/d09551.pdf>. (Accessed 25 August 2011).
- [33] United States General Accounting Office (USGAO), Alaska Native Villages: Most Are Affected by Flooding and Erosion, but Few Qualify for Federal Assistance. Report to Congressional Committees, 2003. <http://www.gao.gov/new.items/d04142.pdf>. (Accessed 25 August 2011).
- [34] L. Hinzman, N. Bettez, W.R. Bolton, F.S. Chapin, K. Yoshikawa, Evidence and implications of recent climate change in northern Alaska and other Arctic regions, *Climatic Change* 72 (2005) 251–298.
- [35] E. Marino, H. Lazrus, Migration or forced displacement?: the complex choices of climate change and disaster migrants in Shishmaref, Alaska and nanumea, Tuvalu, *Hum. Organ.* 74 (4) (2015) 341–350.
- [36] United States Army Corps of Engineers (USACE), Village Erosion Technical Assistance Program. An Examination of Erosion Issues in the Communities of Bethel, Dillingham, Kaktovik, Kivalina, Newtok, Shishmaref, and Unalakleet, United States Army Corps of Engineers, Washington, DC, 2006.
- [37] G. Berardi, Schools, settlement, and sanitation in Alaska Native villages, *Ethnohistory* 46 (2) (1999) 329–359.
- [38] E. Burch Jr., *Social Life in Northwest Alaska: the Structure of Inupiaq Eskimo Nations*, University of Alaska Press, Fairbanks, Alaska, 2006.
- [39] E. Burch Jr., *The Inupiaq Eskimo Nations of Northwest Alaska*, University of Alaska Press, Fairbanks, Alaska, 1988.
- [40] K. Koutsky, *Early Days on Norton Sound and Bering Strait: an Overview of Historic Sites in the BSNC Region: the Shishmaref Area*, vol. 1, University of Alaska, Alaska, 1981. Fairbanks.
- [41] J. Scott, *Seeing like a State: How Certain Schemes to Improve the Human Condition Have Failed*, Yale University Press, New Haven, 1998.
- [42] J. Ducker, Out of harm's way: relocating Northwest Alaska Eskimos 1907–1917, *Am. Indian Cult. Res. J.* 20 (1) (1996) 43–71.
- [43] E. Marino, Immanent threats, impossible moves, and unlikely prestige: understanding the struggle for local control as a means toward sustainability, in: A. Oliver-Smith, X. Shen (Eds.), *Linking Environmental Change, Migration and Social Vulnerability*, UNU Press, Bonn, 2009.
- [44] A. Oliver-Smith, Anthropological research on hazards and disasters, *Annu. Rev. Anthropol.* 25 (1996) 303–328.
- [45] I. Kelman, J.C. Gaillard, J. Mercer, Climate change's role in disaster risk reduction's future: beyond vulnerability and resilience, *International Journal of Disaster Risk Science* 6 (2015) 21–27.
- [46] H. Lazrus, Sea change: island communities and climate change, *Annu. Rev. Anthropol.* 41 (2012) 285–301.
- [47] G. Button, *Disaster Culture: Knowledge And Uncertainty In the Wake of Human And Environmental Catastrophe*, Left Coast Press, Walnut Creek, CA, 2010.
- [48] A. Oliver-Smith, Theorizing vulnerability in a globalized world: a political ecology perspective, in: G. Bankoff, G. Frerks, D. Hillhorst (Eds.), *Mapping Vulnerability: Disasters, Development, and People*, Earthscan, London, 2004.
- [49] E. Marino, H. Lazrus, We are always getting ready. How diverse notions of time and flexibility build adaptive capacity in Alaska and Tuvalu, in: G.V. Button, M. Schuller (Eds.), *Contextualising Vulnerability v.1*, Berghahn Books, New York, 2016.
- [50] R. Taddei, The politics of uncertainty and the fate of forecasters, *Ethics Pol. Environ.* 15 (2) (2012) 252–267.
- [51] J. Wisniewski, *Come on Ugzruk, Let Me Win: Experience, Relationality, and Knowing in Kigiqtaamiut Hunting and Ethnography*, PhD Thesis, University of Alaska, Fairbanks, Alaska, 2010.
- [52] P. Bates, Inuit and scientific philosophies about planning, prediction, and uncertainty, *Arctic Anthropol.* 44 (2) (2007) 87–100.
- [53] P.A. Loring, S. Craig Gerlach, H.J. Penn, Community work in a climate of adaptation: responding to change in rural Alaska, *Hum. Ecol.* 44 (2016) 119–128.
- [54] E.J. Yanarella, R.S. Levine, From sustainability to resilience: advance or retreat? *Sustain. J. Rec.* 7 (2014) 197–208.
- [55] T.F. Thornton, N. Manasfi, Adaptation—genuine and spurious: demystifying adaptation processes in relation to climate change, *Environment and Society: Advances in Research* 1 (2010) 132–155.
- [56] R. Staupe-Delgado, B.I. Kruke, El Niño-induced droughts in the Colombian Andes: towards a critique of contingency thinking, *Disaster Prev. Manag.* 26 (4) (2017) 382–395.
- [57] C.I.P. Sánchez, *Guerra y derecho a la salud en Colombia. El caso del Departamento de Narino*, *Medicina Social* 4 (3) (2009) 177–188.
- [58] UN, Continued Violence Strains Colombia Peace Process, Security Council hears. UN News, 2020. Retrieved from: <https://news.un.org/en/story/2020/10/075402>. (Accessed 16 March 2021).

- [59] L.G.S. Salazar, J. Wolff, F.E. Camelo, Towards violent peace? Territorial dynamics of violence in Tumaco (Colombia) before and after the demobilisation of the FARC-EP. *Conflict, Security & Development* 19 (5) (2019) 497–520.
- [60] R. Staube-Delgado, Can community resettlement be considered a resilient move? Insights from a slow-onset disaster in the Colombian Andes, *J. Dev. Stud.* 56 (5) (2020) 1017–1029.
- [61] L.A. Nurse, R.F. McLean, J. Agard, L.P. Briguglio, V. Duvat-Magnan, N. Pelesikoti, E. Tompkins, A. Webb, Small islands, in: V.R. Barros, C.B. Field, D.J. Dokken, M. D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R. C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, L. L. White (Eds.), *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* Cambridge, Cambridge University Press, United Kingdom and New York, NY, USA, 2014, pp. 1613–1654.
- [62] K. Méheux, D. Dominey-Howes, K. Lloyd, Natural hazard impacts in small island developing states: a review of current knowledge and future research needs, *Nat. Hazards* 40 (2) (2007) 429–446.
- [63] P. Selwyn, Smallness and islandness, *World Dev.* 8 (12) (1980) 945–951.
- [64] C. Farbotko, H. Lazrus, The first climate refugees? Contesting global narratives of climate change in Tuvalu, *Global Environ. Change* 22 (2) (2012) 382–390.
- [65] T. Pearce, R. Currenti, B. Doran, R. Sidle, J. Ford, J. Leon, Even if it doesn't come, you should be prepared: natural hazard perception, remoteness, and implications for disaster risk reduction in rural Fiji, *International Journal of Disaster Risk Reduction* 48 (2020) 101591.
- [66] R. Currenti, T. Pearce, T. Salabogi, L. Vuli, K. Salabogi, B. Doran, R. Kitson, J. Ford, Adaptation to climate change in an interior pacific island village: a case study of Nawairuku, Ra, Fiji, *Hum. Ecol.* 47 (1) (2019) 65–80.
- [67] I. Johnston, Traditional warning signs of cyclones on remote islands in Fiji and Tonga, *Environ. Hazards* 14 (3) (2015) 210–223.
- [68] R. Currenti, *Adaptation to Climate Change in Nawairuku Village, Ra Province, Fiji*, Thesis, University of the Sunshine Coast, Queensland, 2018.
- [69] I. Kelman, *Arcticness: Power and Voice from the North*, UCL Press, London, 2017.
- [70] T.E. Drabek, Disasters as non-routine social problems, *Int. J. Mass Emergencies Disasters* 7 (3) (1989) 253–264.